

Dr. Bijan Kumar Mandal



Dr. Bijan Kumar Mandal
Professor, Mechanical Engineering

- Ph.D. (Engineering, Jadavpur University).
- M.Tech. (Mech. IIT, Kharagpur).
- B.Tech. (Mech. IIT, Kharagpur).

Contact Addresses	Residence	RS 3, 193, Andul Road,
Howrah 711 103, West Bengal, India		
Phone (office)	+91 - 33 - 26684561/62/63 Ext. 797	
Mobile	+91 -	
email	bijan@mech.becs.ac.in	

Research Areas

- Alternative Fuels
- CFD and Numerical Combustion
- Heat Transfer
- Refrigeration

Recent Publications

Journals

- Mandal, B. K., Datta, A., and Sarkar, A. Transient development of methane-air diffusion flame in a confined geometry with and without air-preheat.. International. Journal of Energy Research , 2005, Vol. 29, pp. 145 - 176.
- Mandal, B. K., Datta, A., and Sarkar, A.. Numerical predictions of the soot and NO formation in a confined laminar diffusion flame without and with air preheat, Journal of Power and Energy, Proc. I. Mech. E., Part A, 2006, Vol. 220, pp. 473-486.

- Bijan Kumar Mandal, Amitava Datta, and Amitava Sarkar. A Computational Study of the Soot Formation in Methane-Air Diffusion Flame During Early Transience Following Ignition, *Engineering Letters*, 2008, Vol 16. Pp 746-752.
- Bijan Kumar Mandal, Amitava Sarkar, and Amitava Datta. Transient development of flame and soot distribution in laminar diffusion flame with preheated air." *ASME Journal of Engineering and Gas Turbines Power*, 2009, Vol.131, pp.031501-9.
- Samiddha Palit, Achin Kumar Chowdhuri and Bijan Kumar Mandal. Environmental impact of using biodiesel as fuel in transportation: a review. *International Journal of Global Warming*, 2011, Vol 3, pp. 232-256.
- Ambarish Datta, Achin Kumar Chowdhuri, Bijan Kumar Mandal. Experimental Study on the Performances of Spark Ignition Engine with Alcohol-Gasoline Blends as Fuel, *International Journal of Energy Engineering*, 2012, Vol. 2, pp. 22-27.
- Achinta Sarkar, Achin Kumar Chowdhuri And Bijan Kumar Mandal. Experimental Study on the Use of Gasoline-Ethanol Blends as Spark Ignition Engine Fuel, *International Journal of Earth Sciences and Engineering*, 2012, 264-270.
- A. K. Chowdhuri, A. J. Bhowal, S. Chakrabarti and B.K. Mandal. Numerical Simulation of Laminar Diffusion Flame with Finite rate Chemistry and Variable Property Formulation, *Computational Thermal Sciences*, 2012, Vol. 4, 67-76.
- Arindam Mitra, Subal Kumar, Ambarish Datta, Achin Kumar Chowdhuri and Bijan Kumar Mandal. An Experimental Study on the Performance and Emission Characteristics of a Stationary Petrol Engine using EGR, *International Journal of Earth Sciences and Engineering*, 2012, pp. 245-248.
- Ambarish Datta and Bijan Kumar Mandal. Biodiesel Production and its Emissions and Performance: A Review, *International Journal of Scientific & Engineering Research*, 2012, Vol. 3, pp. 1-5.
- K Sadhukhan, A.K. Chowdhuri and B.K. Mandal, Computer Based Thermodynamic Properties of Ammonia-Water Mixture for the Analysis of Power and Refrigeration Cycle, *International Journal of Thermodynamics*, 2012, Vol.15, pp. 133-139.
- Achinta Sarkar, Achin Kumar Chowdhuri, Arup Jyoti Bhowal and Bijan Kumar Mandal. The Performance and Emission Characteristics of SI Engine Running on Different Ethanol Gasoline Blends, *International Journal of Scientific & Engineering Research*, 2012, Vol. 3, pp. 1-7.
- Ambarish Datta, Bijoy Das, Achin Kumar Chowdhuri, Bijan Kumar Mandal. Experimental Study on the Performance of Biodiesel Fuelled CI Engine Using Exhaust Gas Recirculation, *International Journal of Emerging Technology and Advanced Engineering*, 2013, Vol. 3, pp. 89-95.
- Achinta Sarkar, Ambarish Datta, Bijan Kumar Mandal. Performance Characteristics of Spark Ignition Engine Using Ethanol as Fuel at Different Operating Conditions *International Journal of Emerging Technology and Advanced Engineering*, 2013, Vol. 3, pp. 96-100.
- Pratibhu Roy, Indranil Sinha, Bijan Kumar Mandal, Achin Kumar Chowdhuri. The Effect of Exhaust Gas Recirculation (EGR) In Compression Ignition Engine, *International Journal of Emerging Technology and Advanced Engineering*, 2013, Vol. 3, pp.106-111.
- Indranil Ray, Tanuj Chakraborty, Debapriya Roy, Ambarish Datta, Bijan Kumar Mandal. Production, Storage and Properties of Hydrogen as Internal Combustion Engine Fuel: A Critical Review, *International Journal of Emerging Technology and Advanced Engineering*, 2013, Vol. 3, pp. 119-125.
- Achin Kumar Chowdhuri, Somnath Chakrabarti and Bijan Kumar Mandal. Numerical Study

of Radiation and Airpreheating Effect on the Velocity, Temperature and Species Distribution in a Confined Laminar Coflow Diffusion Flame, Computational Thermal Sciences, 2013, Vol. 5, pp. 425-440.

- Achin Kumar Chowdhuri, Arindam Mitra, Bijan Kumar Mandal and Somnath Chakraborti. Numerical Prediction of Fuel Dilution Effect on the Flame Structure and Temperature Distribution in Diffusion Flame, International Journal of Emerging Technology and Advanced Engineering, 2013, Vol. 3, pp. 139-145.

- Arup Jyoti Bhowal and Bijan Kumar Mandal, Numerical Study of Gravity Effect on the Nitric Oxide Formation in Co-Flow Methane -Air Diffusion Flame, International Journal of Emerging Technology and Advanced Engineering, 2013, Vol. 3, pp. 146-152.

- Sudipta Paul, Achinta Sarkar, Bijan Kumar Mandal. Environmental Impacts of Halogenated Refrigerants and Their Alternatives: Recent Developments, International Journal of Emerging Technology and Advanced Engineering, 2013, Vol. 3, pp.400-409

- Ranendra Roy and Bijan Kumar Mandal. First Law and Second law Analysis of mechanical Vapour Compression Refrigeration System using Refrigerants CFC12, R134a and R290, International Journal of Current Engineering and Technology, 2014, Special Issue-3, pp. 191-196.

- Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal. Numerical Investigation of the Performance and Emission Characteristics of a CI engine using Diesel and its blends with Ethanol and Jatropa Biodiesel, International Journal of Current Engineering and Technology, 2014, Special Issue-3, pp. 5-9.

- Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal. Numerical Simulation of CI Engine Characteristics Fueled with Soyabean Biodiesel and its Blends, Engineering Sciences International Research Journal, 2014, Vol. 2, pp. 159-162.

- Ranendra Roy and Bijan Kumar Mandal. Computer Based Thermodynamic Properties of Alternative Refrigerant R-134A, Engineering Sciences International Research Journal, 2014, Vol. 2, pp. 163-169.

- Ambarish Datta and Bijan Kumar Mandal, Effect of Injection Pressure on the Performance and Emissions of Biodiesel Fueled CI Engine, Engineering Sciences International Research Journal, 2014, Vol. 2, pp. 217-220.

- Ambarish Datta, Samidhdha Palit and Bijan Kumar Mandal. An Experimental Study on the Performance and Emission Characteristics of a CI Engine Fuelled with Jatropa Biodiesel and its Blends with Diesel, Journal of Mechanical Science and Technology, 2014, Vol. 28, issue 5, pp.1961-1966.

- Ambarish Datta and Bijan Kumar Mandal, 2014, Prospects and Threats to Jatropa Biodiesel as the Future Sustainable Fuel of India, Energy Technology & Policy, 2014, Vol.1, pp. 8-14.

- Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal 2014. An Experimental and Numerical Investigation of the Performance, Combustion and Emission Characteristics of a Diesel Engine fueled with Jatropa Biodiesel, Energy Procedia, 2014, Vol. 54, pp. 455-467.

- Bibekananda Nayak, Bijan Kumar Mandal, Effect of generator, condenser and evaporator Temperature on the Performance of Ejector Refrigeration System (ERS), , Journal of Basic and Applied Scientific Research, 2014, Vol. 1, pp. 4-9

- Aritra Chatterjee, Suhail Dutta, Bijan Kumar Mandal, Combustion, Performance and emission Characteristics of Hydrogen as an Internal Combustion Engine fuel, Journal of

Aeronautical and Automotive Engineering, 2014, Vol. 1, pp. 1-6.

- Mukul Bisoi,, Gaurav Paul, Achin Kumar Chowdhuri and Bijan Kumar Mandal. Numerical simulation of natural convection in a square enclosure for different Rayleigh numbers, International Journal of Energy & Technology, 2014, Vol. 6, pp. 1–9.
- Ambarish Datta, Suhail Dutta, Bijan Kumar Mandal, Effect of Methanol Addition to Diesel on the Performance and Emission Characteristics of a CI Engine, Journal of Basic and Applied Scientific Research, 2014, Vol. 1, No. 3, pp. 8-13.
- Achin Kumar Chowdhuri, Somnath Chakrabarti and Bijan Kumar Mandal, Numerical Prediction of Radiation and Air Preheating Effects on the Soot Formation in a Confined Laminar Co-Flow Diffusion Flame, International Journal of Thermodynamics (accepted).
- Achin Kumar Chowdhuri, Somnath Chakrabarti and Bijan Kumar Mandal, Numerical Prediction of effect of Nitrogen addition to fuel on soot formation in a diffusion flame, Combustion Science and Technology (communicated).
- Arup Jyoti Bhowal and Bijan Kumar Mandal, Numerical Investigation of the Effect of Reduced Gravity and Radiation on Temperature and NO Formation in Diffusion Flame, International Journal of Heat and Mass Transfer (communicated).

Conferences

- Mandal, B.K., and Mandal , D. K. . An approach to use ash as an energy saving insulant over steam pipe. 2nd All India People’s Technology Congress, 12-14th February,1999, Science City, Calcutta, India
- Mandal, B.K. , and Chowdhuri, A.K. Comparative study of the performance of promising alternative refrigerants. All India Seminar on Refrigeration and Air-Conditioning, 30 – 31 October, 1999, The Institution of Engineers (India), Aurangabad, India.
- Mandal, B.K., and Chowdhuri, A.K. Development of a computer code for the determination of the thermodynamic properties of refrigerant R-12. National Conference on Emerging Trends in Mechanical Engineering, 10-12th September, 2004. Verna , Goa, India
- Mandal, B.K., Datta, A., and Sarkar, A. Transient development of flow and temperature fields of a confined methane-air diffusion flame. 31st National Conference on Fluid Mechanics and Fluid Power, 16-18 December, 2004, Kolkata, India.
- Mandal, B.K., and Datta, A. Effects of fuel and air stream dilution on soot formation in a laminar diffusion flame. XIX National Conference on IC Engines and Combustion, 21- 23rd December, 2005, Annamalai University, Annamalainagar, India.
- Mandal, B.K., Datta, A., and Sarkar, A. Effects of air preheating on the soot and NO formation in confined laminar diffusion flame. 18th National & 7th ISHMT-ASME Heat and Mass Transfer Conference, January 4 - 6, 2006, IIT Guwahati, India.
- Mandal, B.K., and Datta, A. Air-preheating effect on the steady state distribution of velocity and temperature of a diffusion flame with variable formulation. National Conference on Emerging Trends in Mechanical Engineering, 10-11 February, 2006, B.M.S College of Engineering, Bangalore, India.
- Bijan Kumar Mandal, Amitava Datta, and Amitava Sarkar. Numerical Prediction of

Air-preheating Effect on Soot Formation in Diffusion Flame During Early Transience Following Ignition. World Congress on Engineering 2007, London, UK, 2-4 July, 2007.

- Samiddha Palit, Bijan Kumar Mandal, Sudip Ghosh, and Arup Jyoti Bhowal. Performance and Emission Characteristics of Bio-Diesel as an Alternative Diesel Engine Fuel, ASME 2008 2nd International Conference on Energy Sustainability, Volume 1, August 10–14, 2008, Jacksonville, Florida, USA

- Bijan Kumar Mandal, Kousik Sadhukhan, Achin Kumar Chowdhuri, and Arup Jyoti Bhowal. Analysis of a Combined Power and Refrigeration Cycle Working on Solar Energy. ASME 2008 2nd International Conference on Energy Sustainability, Volume 1. August 10–14, 2008, Jacksonville, Florida, USA

- Samiddha Palit, Bijan Kumar Mandal, Sudip Ghosh, and Arup Jyoti Bhowal, An Experimental Study on the Performance and Emission Characteristics of Jatropha Biodiesel Fuelled CI Engine, ASME 2009 3rd International Conference on Energy Sustainability, Volume 1, ASME 2009 3rd International Conference on Energy Sustainability collocated with the Heat Transfer and InterPACK09 Conferences (ES2009) July 19–23, 2009, San Francisco, California, USA

- A.K. Chowdhuri, A. J. Bhowal, B. K. Mandal, Transient Modelling of Soot Formation and its Burnout in Methane-Air Diffusion Flame. International Conference on Advances in Mechanical Engineering (ICAME-2009), 3 – 5 August 2009, Department of Mechanical Engineering Sardar Vallabhbhai National Institute of Technology Surat – 395 007 Gujarat State, India.

- K.K.Datta Gupta, Samir Chakravarti, B.K.Mandal, A.K.Chowdhuri and S.Ghosh, Performance Assessment of a Solar Powered Lithium Bromide-Water Absorption Cooling System with Flat-Plate Collectors. International Conference on Advances in Mechanical Engineering (ICAME-2009), 3 – 5 August 2009, Department of Mechanical Engineering Sardar Vallabhbhai National Institute of Technology Surat – 395 007 Gujarat State, India.

- Manjula Das (Ghatak), Sujoy Kumar Mukherjea, Bijan Kumar Mandal. Numerical Prediction of Velocity and Temperature Distributions in a Diffusion Flame under Reduced Gravity Conditions. Proc. of the International Conference on Advances in Mechanical Engineering, August 3-5, 2009. S.V. National Institute of Technology, Surat – 395 007, Gujarat, India.

- Bijan Kumar Mandal, Sujoy Kumar Mukherjea, Manjula Das(Ghatak), Simulation of Confined Co-Flow Methane-Air Diffusion Flame Under Microgravity Condition With Variable Property Formulation, ASME Turbo Expo 2011, June 6-10, 2011, Vancouver, Canada (Accepted for presentation and publication in the proceedings).

- Bijan Kumar Mandal, Samidha Palit and Sudip Ghosh. An Experimental Investigation into the Energetic and Environmental Performances of a CI Engine Running on Biodiesel-Petrodiesel Blends, International Conference on Clean Energy Technologies and Energy Efficiency for Sustainable Development, December 27-29, 2010, Dehradun, India.

- Achinta Sarkar, Achin Kumar Chowdhuri and Bijan Kumar Mandal, Performance and Emission Characteristics of a Variable Compression SI Engine Using Ethanol Gasoline Blends as Fuel, Proceedings of the International Conference on Mechanical Engineering 2011 (ICME2011) 18-20 December 2011, Dhaka, Bangladesh.

- Achinta Sarkar, Partha Pratim Dey and Bijan Kumar Mandal, Experimental Investigation of Spark Ignition Engine Using Gasoline-Ethanol Blends as Fuel under Moderate Compression

Ratio, Proceedings of the International Conference in Engineering, Technology and Management 2012 (ICETM 2012) Puducherry, India.

- Ambarish Datta, Partha Pratim Dey and Bijan Kumar Mandal, Effect of Injection Timing on the Performance and Emissions of Biodiesel fueled CI Engine, Proceedings of the International Conference in Engineering, Technology and Management 2012 (ICETM 2012) Puducherry, India.

- Indranil Sinha, Achin Kumar Chowdhuri and Bijan Kumar Mandal, Experimental Study on the Performance of a Petrol Engine Using Preheated Inlet Air, Proceedings of the International Conference in Engineering, Technology and Management 2012 (ICETM 2012) Puducherry, India.

- Achinta Sarkar, Achin Kumar Chowdhuri and Bijan Kumar Mandal, Simulation of a Two-Stage R-22 Refrigeration System with Flash Intercooler, Proceedings of the International Conference on Advances in Mechanical Engineering & its Interdisciplinary Areas, (ICAMEI 2012) Kolaghat, India.

- Ambarish Datta and Bijan Kumar Mandal, Effect of Ethanol Addition to Diesel and Biodiesel Mixture on the Performance and Emissions of Compression Ignition Engine: A Review, Proceedings of the International Conference on Advances in Mechanical Engineering & its Interdisciplinary Areas, (ICAMEI 2012) Kolaghat, India.

- Indranil Ray, Soumyabrata Maiti, Achinta Sarkar and Bijan Kumar Mandal, Progress in the Numerical Investigation of Heat Transfer within a Cavity with Some Simulation Results, Proceedings of the International Conference on Advances in Mechanical Engineering & its Interdisciplinary Areas, (ICAMEI 2012) Kolaghat, India.

- Achin Kumar Chowdhuri, Arindam Mitra, Somnath Chakrabarti and Bijan Kumar Mandal, Computational Study of Fuel Dilution Effect on the Soot Formation in Methane-Air Laminar Confined Diffusion Flame, Proceedings of the ASME 2013 7th International Mechanical Engineering Congress & Exposition, IMECE2013, November 15-21, San Diego, CA, USA.

- Ambarish Datta and Bijan Kumar Mandal, Production, Performance and Emissions of Biodiesel as Compression Ignition Engine Fuel, Proceedings of the ASME 2013 7th International Mechanical Engineering Congress & Exposition, IMECE2013, November 15-21, San Diego, CA, USA.

- Gaurav Paul, Ambarish Datta, Bijan Kumar Mandal. Effect of Injection Timing on the Performance and Emission Characteristics of a CI Engine using Diesel and Methyl Soyate, Proceedings of National Conference on Recent Advances in Mechanical Engineering (NCRAME) 2013, Nerist, Nirjuli.

- Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal, An Experimental and Numerical Investigation of the Performance and Emission Characteristics of a Diesel Engine fueled with Jatropha Biodiesel, IVth International Conference on Advances in Energy Research, December 10-12, 2013, Indian Institute of Technology Bombay, Mumbai

- Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal, Numerical Investigation of Performance and Emission Characteristics of Biodiesels as Compression Ignition Engine Fuels, International Conference on Emerging Trends in Renewable Energy (ICETRE 2013), December 27-28, 2013, Bhubaneswar, India.

- Pratibhu Roy, Ranendra Roy and Bijan Kumar Mandal, Performance and Emission Characteristics of Methanol and Di-Methyl Ether as Spark Ignition Engine Fuel: A Review, International Conference on Emerging Trends in Renewable Energy (ICETRE 2013), December

27-28, 2013, Bhubaneswar, India.

- Pratibhu Roy, Ambarish Datta and Bijan Kumar Mandal, Experimental Study on the Performance and Emission Characteristics of a SI Engine Using Methanol as Fuel, Proceedings of the 22th National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, December 28-31, 2013, IIT Kharagpur, India.

- Ranendra Roy, Gaurav Paul and Bijan Kumar Mandal, Thermodynamic Property formulation of Halogenated Hydrocarbon refrigerant Using Virial Coefficient Type Equation of State, Proceedings of the 22th National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, December 28-31, 2013, IIT Kharagpur, India.

- Bijan Kumar Mandal and Arup Jyoti Bhowal, Numerical Study of the Radiation Effect on Thermal NO Formation in Diffusion Flame under Reduced Gravity Conditions, Proceedings of the 22th National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, December 28-31, 2013, IIT Kharagpur, India.

- Arup Jyoti Bhowal and Bijan Kumar Mandal, Numerical investigation of gravity effect on the temperature and flow fields in a methane air diffusion flame, Proceedings of the International Conference on Mechanical Engineering 2013 (ICME2013) 20 – 21 June, 2014, Dhaka, Bangladesh.

- Achin Kumar Chowdhuri, Somnath Chakrabarti, Bijan Kumar Mandal A computational study of the effect of fuel dilution and air-preheating on soot formation in diffusion flame, Proceedings of the International Conference on Mechanical Engineering 2013 (ICME2013) 20 – 21 June, 2014, Dhaka, Bangladesh.

- Ambarish Datta, Gaurav Paul, Bijan Kumar Mandal, Effect of Compression Ratio on the Performance, Combustion and Emission from a Diesel Engine Using Palm Biodiesel, Proceedings of the 6th BSME International Conference on Thermal Engineering (ICTE 2014) 19 – 21 December, 2014, Dhaka, Bangladesh. (Accepted)

- Ambarish Datta, Gaurav Paul, Bijan Kumar Mandal, Numerical Investigation on the Effects of EGR on CI Engine Characteristics Using Soyabean Biodiesel, Proceedings of the 6th BSME International Conference on Thermal Engineering (ICTE 2014) 19 – 21 December, 2014, Dhaka, Bangladesh. (Accepted)

- Ranendra Roy, Arup Jyoti Bhowal, Bijan Kumar Mandal, Numerical Simulation of Vapour Compression Refrigeration System Using Refrigerant R152a, R404A, R507 and R600a, Proceedings of the 6th BSME International Conference on Thermal Engineering (ICTE 2014) 19 – 21 December, 2014, Dhaka, Bangladesh. (Accepted)

- 38) Manish Choudhary, Achin Kumar Chowdhuri, Bijan Kumar Mandal, Effect of Exhaust Gas Recirculation (EGR) on the Performance and Emission Characteristics in Diesel Engine, Proceedings of the 6th BSME International Conference on Thermal Engineering (ICTE 2014) 19 – 21 December, 2014, Dhaka, Bangladesh. (Accepted)

Courses Undertaken

Department of Mechanical Engineering , BESU, Shibpur - 7111 03, INDIA